RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole 41-06-06

Log Event A

Borehole Information

Farm : SX **Tank :** SX-106 **Site Number :** 299-W23-226
N-Coord : 35,404 **W-Coord :** 75,869 **TOC Elevation :** Unknown
Water Level, ft : **Date Drilled :** 4/17/1978

Casing Record

Type : Steel-welded **Thickness :** 0.280 **ID, in. :** 6
Top Depth, ft. : 0 **Bottom Depth, ft. :** 130

Equipment Information

Logging System : 1 **Detector Type :** HPGe **Detector Efficiency:** 35.0 %
Calibration Date : 03/1995 **Calibration Reference :** GJPO-HAN-1

Logging Information

Log Run Number : 1 **Log Run Date :** 5/25/1995 **Logging Engineer:** Kim Benham
Start Depth, ft.: 0.0 **Counting Time, sec.:** 100 **L/R :** L **Shield :** N
Finish Depth, ft. : 29.0 **MSA Interval, ft. :** 0.5 **Log Speed, ft/min.:** n/a

Log Run Number : 2 **Log Run Date :** 5/26/1995 **Logging Engineer:** Kim Benham
Start Depth, ft.: 28.0 **Counting Time, sec.:** 100 **L/R :** L **Shield :** N
Finish Depth, ft. : 122.5 **MSA Interval, ft. :** 0.5 **Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : P.D. Henwood

Data Processing Reference : Data Analysis Manual Ver. 1 Analysis Date : 8/11/1995

Analysis Notes :

This borehole was drilled in 1978 to 130 ft. Six-in. casing was placed to 125 ft. The borehole was grouted from 125 to 130 ft and from 0 to 18 ft. The logging depth was 122.5 ft. The driller's log indicates gravels and boulders at 80 ft.

This borehole was logged in two runs: run 1 from 0 to 29 ft and run 2 from 28 to 122.5 ft, with a depth overlap of 1 ft. The data showed good agreement at the overlap. The pre- and post-survey field verification spectra showed consistent activities but energy calibrations differed because of gain drift in the instrumentation. Spectra were recalibrated for energy versus channel where appropriate.

Log data were corrected for casing attenuation assuming a 0.33-in.-thick casing. Because the casing was measured in the field to be 0.313 in., the concentrations are slightly (almost negligible) over-estimated. No corrections for water in the borehole were necessary.

Cs-137 was the only man-made radionuclide detected in the borehole. The highest concentrations were reported from the surface to about 10 ft with a maximum concentration of 10 pCi/g. A concentration of about 1 pCi/g was reported at 16.5 ft and at less than 1 pCi/g at the bottom of the borehole. No other concentrations above the MDA was reported throughout the borehole.

The naturally gamma log data indicate possible lithology changes from 65 to 69 ft, 80 to 83 ft, and below 83 ft.

Log Plot Notes:

Three log plots are provided. The Cs-137 concentrations are provided in a separate plot to document the relative concentration and the shape of the distribution. The error of the concentration determination is shown by the error bars, which represent the 95-percent confidence interval. The calculated MDA is shown on the plot as open circles. If the calculated concentration is less than the MDA, it is considered a non-detect and the concentration is not reported.

A plot of naturally occurring radionuclides is also provided (see discussion above regarding error bars and the MDA) to permit correlation of these data with geologic information. On the Th-232 plot, the MDA value is shown as zero at some depth locations. This zero value was a result of an anomaly in the commercial spectrum analysis software which has been corrected by the vendor. Because the MDA calculation at these few data points is not significant relative to the intended use of the thorium plot, the data were not reprocessed and corrected. Therefore, these MDA data points on the plot should be ignored.

A combination plot is also provided with Cs-137, naturally occurring radionuclides, total gamma data derived from the spectral gamma data, and the latest available WHC Tank Farms gross gamma data. The plots allow the user to determine the influence of the various radionuclides on the total gamma inventory.